

Dc`]nY]'6UgY`']bZcfa]Yfh. GdUbbYbXYf =bZcghUbX'Ub'XYf'5i hc#A cV]`'6UgY`

6Ygi WXYb'G]Y'XYb'[Ya Y]bgUa Yb' ⇒ ZcghUbX'XYf ?Ubhcbgdc`]nY]'6UgY`!GhUXh'i bX'Dc`]nY]'6UgY`!@UbXgWXUZh'Ub XYf'5i hc#A cV]`'6UgY`'&\$&(ž'*"!, "'GYdhYa VYf"

8]Y'JcfvyfY]hi b[Yb'ZØf'X]Y'VY`]YVhY'5i hc#AcV]`'6UgY`'&\$&('g]bX]b'jc``Ya'; Ub[Y"'\delta'X]YgYa'\d\f'Z]bXYh'X]Y'JYfUbghU`hi b['jca'*"V]g', "'GYdhYa VYf']b'XYf'Gh"'\d_cVg\U``Yž']b'XYf'; YaY]bXYA ØbW\YbghY]b']a'? Ubhcb'6UgY`!@UbXgW\UZhž'ghUhh'''K]Y']b'XYbjYf[Ub[YbYb'\d\]\fYb'k]fX'X]Y'AYggY'jcfUigg]W\h`]W\'YhkU'\&)"\$\$\$6Ygi W\Yf]bbYb'ibX'6Ygi W\Yf'Ubn]Y\Ybž'X]Y'g]W\'ØVYf'X]YbYiYghYb'9bhk]W_`ib[Yb']b'XYf'5i hcacV]`]bXighf]Y']bZcfa]YfYb_\ObbYb''8Yf'9]bhf]hh'nifAYggY']gh'_cghYb`cgž'kUg'g]Y'ni'Y]bYfUhnfU_h]jYb':fY]nY]h[YghU`hib['ZØf'X]Y'[UbnY':Ua]`]Y'aUW\h'

9]b 'VYgcbXYfYg'<][\`][\h'k]fX'XYf'[Ya Y]bgUa Y

DZcfa Uh]cbgghUbX'XYf'? Ubhcbgdc`]nY]'6UgY`!GhUXh'i bX'XYf'Dc`]nY]

6UgY`!@UbXgW\UZh'gY]b"'8]YgYf'k]fX']b'nk Y]'9hU[Yb'dfÀgYbh]Yfh

i bX'VYZ]bXYh'g]W\'ghfUhY[]gW\']b'XYf'BÀ\Y'XYf'HfUa\U`hYghY``Y

XYf'@]b]Y'%('Ub'XYf'Gh"'\J_cVg!GhfUggY"'8ifW\'X]YgY'[Øbgh][Y

@U[Y'g]bX'X]Y'Dc`]nY]a]hUfVY]hYf'`Y]W\h'YffY]W\VUf'i bX'ghY\Yb'XYb

6Ygi W\Yfb'ZØf'; YgdfÀW\Y'nif'JYfZØ[ib["

$=bhYfU_h]iY^5b[YVchY^7Z\emptysetf^3ib[ibX^5h]$

9]b 'nYbhfU`Yf`5bn]Y\i b[gdi b_h`Ua 'GhUbX'XYf`Dc`]nY]']gh'X]Y bYi Ufh][Y'< ØdZVi f[ž'X]Y'j cf`U``Ya 'X]Y''Øb[YfYb'6Ygi W\Yf Ub`c\W_Yb'gc``"'?]bXYf'_\ObbYb'ZfY]'\Yfi a gdf]b[Yb'i bX'g]\W\Ui ghc\Ybž'k \A\fYbX']\fY'9`hYfb'g]\W\'\ØVYf'g]\W\Yf\Y]hgfY`Yj UbhY H\Ya Yb']bZcfa]YfYb"'Ni XYa 'k]fX']a '9]b[Ub[gVYfY]\W'XYf

 $GhUbXZ\dot{A}WXY'Y]b'Dc`]nY]a chcffUX'i bX'Y]b'DUhfci]``YbZU\fnYi [Ui g[YghY``h"8]YgY'5b[YVchY'V]YhYb'X]Y'A <math>\dot{O}[`]WX_Y]h'ZØf: chcg\cch]b[g''Y]bY'gdUbbYbXY'; Y`Y[Yb\Y]h'ZØf'5i hc`]YV\UVYfibX'_Y]bY': Ubg"$

8]Y; YgdfÀWXY'Ua 'GhUbX'n]Y`Yb'XUfUi Z'UVž'XYb'?cbhU_h'ni f 6Yj Ò`_Yfi b['ni 'ZÒfXYfb"'8]Y'A]hUfVY]hYf'XYf'VY]XYb Dc`]nY]cf[Ub]gUh]cbYb'g]bX'[i h'j cfVYfY]hYhž'i a '±bZcfa Uh]cbYb'ni G]WXYf\Y]hgZfU[Ybž'J Yf_Y\fgj cfgWXf]ZhYb'i bX'dfÀj Ybh]j Yb A U» bU\a Yb'ni 'hY]`Yb"'Ni XYa 'g]bX'g]Y'cZZYb'ZØf'5bfY[i b[Yb'i bX K ØbgWXY'XYf'6Ygi WXYfž'k Ug'Y]bYb'dYfgÒb`]WXYb'5i ghUi gWX Yfa Ò[`]WXh'i bX'XUq'J YfhfUi Yb']b'X]Y'G]WXYf\Y]hq_fÀZhY'qhÀf_h"

9]b '6`]W_ ']b 'X]Y 'Ni _i b Zh

8]Y'5i hc#A cV]`'6UgY`'ghY``h'b]W\h'bi f'U_hi Y``Y': U\fnYi [Y'j cfž gcbXYfb'[]Vh'Ui W\'Y]bYb'5i gV`]W_'Ui Z'ni _ØbZh][Y'9bhk]W_`i b[Yb]a 'A cV]`]hÀhggY_hcf"'9g'k]fX'Yfk UfhYhž'XUgg'HfYbXg'k]Y
9`Y_hfca cV]`]hÀh'i bX'bUW\\U`h][Y'HfUbgdcfh`Ògi b[Yb'Y]bYnYbhfU`Y'Fc``Y'gd]Y`Yb'kYfXYb"'8]Y'Dc`]nY]'k]fX'XU\Yf'Ui W\

DZcfa Uh]cbYb'ni 'H\Ya Yb'k]Y'JYf_Y\fgØVYfk UW\i b['i bXG]W\Yf\Y]h'[YVYbž'i a 'XUg'6Yk i gghgY]b'XYf': U\fnYi [ZØ\fYf'ZØfG]W\Yf\Y]h']a 'GhfU»Yb]Yf_Y\fni 'gW\ÀfZYb"

8]Y'A YggY']gh'Y]bY'k Yfhj c``Y'; Y`Y[Yb\Y]hž'X]Y'bYi YghYb
HYW\bc`c[]Yb'i bX'G]W\Yf\Y]hg_cbnYdh]cbYb'_YbbYbni `YfbYb'i bX
[`Y]W\nY]h]['X]Y'`c_U`Y'Dc`]nY]UfVY]h'\Ui hbU\'ni 'Yf`YVYb"'5i g
X]YgYa'; fi bX'k]fX'X]Y'Ni gUa a YbUfVY]h'nk]gW\Yb'XYb'6Y\ÒfXYb
i bX'XYf'6Yj Ò`_Yfi b[ž'k]Y'g]Y'Ua' +bZcfa Uh]cbgghUbX'g]W\hVUf
k]fXž'U`q'VYqcbXYfq'k]W\h]['YfUW\hYh"

K Y]hYfY ⇒ Zcfa Uh]cbYb ØVYf X]Y 5i hc#A cV]`6UgY`&\$&(`_ÒbbYb Ua `GhUbX`XYf`Dc`]nY]'i bX`Ui Z`XYf`cZZ]n]Y``Yb`K YVg]hY`XYf JYfUbghU`hi b['Y]b[Y\c`h`k YfXYb"' ⇒ hYfYgg]YfhY`XØfZYb`g]W\`Ui Z Y]b`gdUbbYbXYg`9fY][b]g`ZfYi Ybž`XUg`b]W\h'bi f`X]Y`bYi YghYb: U\fnYi [Y`dfÀgYbh]Yfhž`gcbXYfb`Ui W\`X]Y`[i hY`Ni gUa a YbUfVY]h nk]gW\Yb`XYf`Dc`]nY]'i bX`XYf`6Yj Ò`_Yfi b['j YfXYi h`]W\h''

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. 'b!U["XY